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Individual ideology and biased perceptions of income

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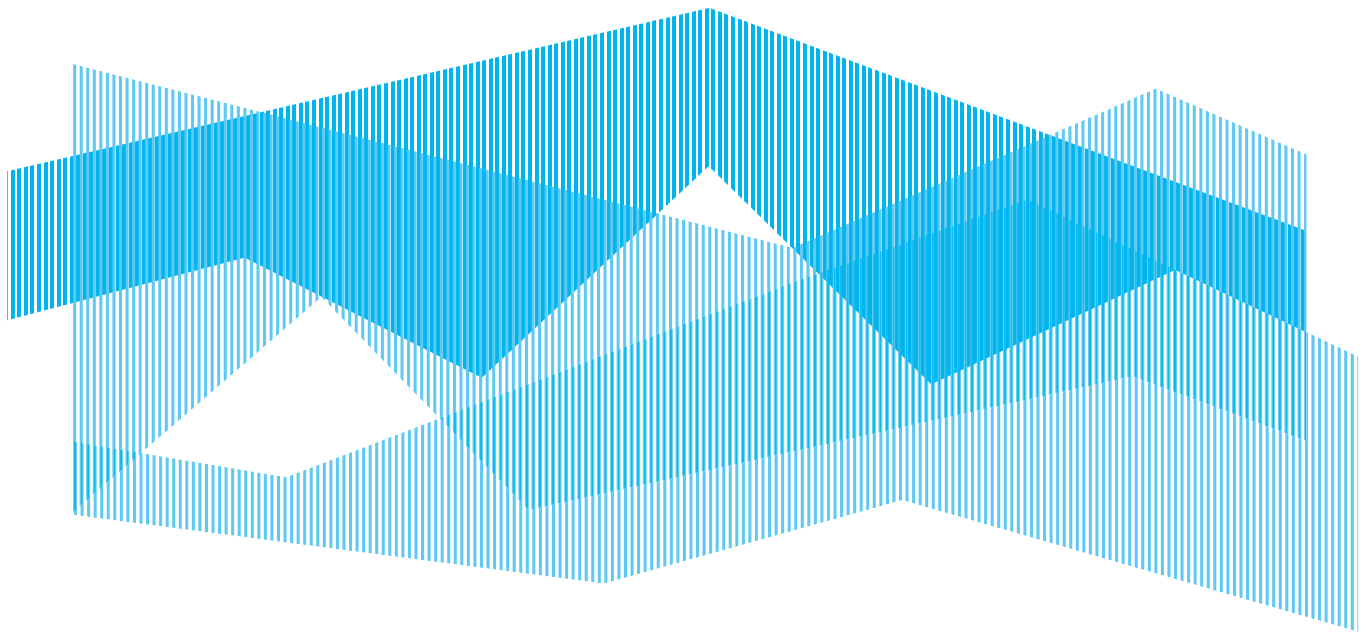
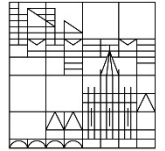
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Individual Ideology and Biased Perceptions of Income

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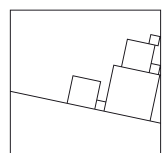
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Individual ideology and biased perceptions of income

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May 2024

Abstract

In this paper, we focus on individuals' perceptions of their own position within the income distribution and argue that ideological biases influence these perceptions. In particular, we take into account the two-dimensional ideological space of European party systems and develop arguments about social class mis-identification (economic dimension) and cultural threat and privilege (cultural dimension) leading to either over- or underestimation. We use novel survey data from the Konstanz Inequality Barometer (2020 and 2022) and find that socially conservative individuals are more likely to underestimate their relative income position, i.e. they perceive themselves to be worse off than they are. By contrast, individuals with a rightist position on the economic ideology are more likely to overestimate their relative position. These biases have downstream consequences for electoral behavior as well. Our findings have important consequences for our understanding of individuals' perceptions of inequality but also, more broadly, for the politics of redistribution.

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1 Introduction

There is mounting evidence that subjective perceptions and evaluations of inequality are highly influential in shaping political attitudes and preferences (Trump 2023; Gimpelson and Treisman 2018; Bobzien 2020; Hecht 2022). Accordingly, the literature on perceptions of inequality has flourished in the last years (for a review see García-Castro et al. 2022). In this paper, we do not look at broader perceptions of inequality, but focus on the individuals' perceptions of their position within the income distribution. This concept is at the core of many political economy models of redistribution and therefore, individual perceptions of (income) positions have broader implications for inequality as well. Recent work suggests the existence of systematic biases in these perceptions as richer individuals tend to underestimate their position, whereas poorer individuals are more likely to overestimate theirs, contributing to a significant 'centrist' bias in perceptions (Karadja et al. 2017; Engelhardt and Wagener 2017; Fernández-Albertos and Kuo 2018; Bublitz 2022) and, by implication, an underestimation of the overall inequality in income. So far, researchers have mostly focused on identifying this bias and exploring its socio-demographic determinants. The contribution of this paper, however, is to analyze whether individual ideological dispositions are related to subjective perception biases. This way, ideological worldviews could shape the way individuals perceive their position in the overall distribution of income, which has important implications for the politics of redistribution, as we show in this paper.

There are only a few studies which have started to analyze this association. Volpi and Giger (2022), for instance, show how ideological predispositions are relevant for the perception of inequality on the societal level. These socio-tropic perceptions of inequality may be more likely to be influenced by ideological worldviews as they are related to the state of society broadly defined. By contrast, we focus on individuals' perceptions of their position in the income distribution, which only has indirect implications for the nature and extent of societal inequality. Some papers (Engelhardt and Wagener 2017; Karadja et al. 2017) have started to explore this issue as well, finding some evidence for ideology-related effects, but with no clear conclusion yet.

Furthermore, these existing works treat ideology as a uni-dimensional construct, which seems at odds with both political psychological work on the topic (see e.g. Bakker and Lelkes 2022) and with the reality in Western European countries where the political space has become two-dimensional (see e.g. Caughey et al. 2019; Ford and Jennings 2020). Whereas the first dimension centers on the classical conflict about redistribution (markets vs. the state), the exact nature of the second dimension remains contested in

the literature with one camp arguing it to be about Europe, i.e. transnational political integration (Hooghe and Marks 2009), while others see it more as a conflict between "winners" and "losers" of globalization (Kriesi et al. 2008) or supporters and opponents of green, alternative and social liberal values. Notwithstanding this debate, it seems thus very appropriate to look at distortions in the perceptions of inequality also by taking into account this two-dimensional political space. Such an approach is promising given the contradictory results of previous research on the topic that might be simply the result of conflating two dimensions of conflict into one.

We thus engage in studying how the perception of one's own position in the income ladder is related to ideological beliefs on an economic and cultural dimension of political conflict, showing how both dimensions are differently associated with perception biases. For our empirical analysis, we use novel survey data from the Konstanz Inequality Barometer (waves 2020 and 2022). The data covers about 6,000 respondents per wave for the case of Germany, using a high-quality online access panel.

In a first step, we look at perceptions of income position and how these are influenced by the ideological positioning of our respondents across two dimensions. Using respondents' left-right self-placement, we do not find any statistically significant association. However, when using a more differentiated two-dimensional measure of ideology, we identify robust and significant associations. We find that individuals with a socially conservative ideology are more likely to underestimate their relative income position, i.e. they perceive themselves to be worse off than they objectively are. By contrast, individuals subscribing to a rightist position on the economic ideology scale are more likely to overestimate their relative position. These variegated effects of the two ideological dimensions explain why the broader left-right ideology remains weakly connected to income perceptions.

In the next step, we are also interested in the potential consequences of these biases for party preferences and, ultimately, voting behavior. The second goal of our paper is thus to link the existence of these ideological biases to party preferences and to assess more down-stream consequences of these perceptual distortions. Given the centrality of subjective accounts of inequality, we study whether individuals' misperceptions of their position on the income scale are meaningfully related to electoral behavior. We find that even after controlling for ideological predisposition, individuals who underestimate their relative income position are more likely to vote for the far-left party Die Linke and less likely to vote for the center-right CDU/CSU, which is in line with an economic understanding of the perception bias. At the same time, underestimation is related to higher support for the right-wing populist party AfD and lower support for the greens and the liberals which is in line with a cultural understanding of perception bias. While

our approach does not allow to make any causal claims on the direction of impact as the survey data is observational and cross-sectional, we posit that there are plausible theoretical reasons to assume that ideology shapes perceptions of income rather than vice versa and that the vote choice comes at the end of this chain.

The paper proceeds as follows: First, we discuss perception biases in general and in particular two-dimensional ideological roots of perception biases. Next we introduce our data and approach and initial analyses confirming the two-dimensionality of political competition in Germany. After that we present our empirical findings on the relation between ideology and perception bias and the relation between perception bias and vote intentions before we end with some concluding remarks.

2 Theory

Political psychology has long established that subjective perceptions of reality are influential in explaining political attitudes and behavior. Or to say with the words of the seminal Robert Dahl: “Between a condition of objective inequality and the response of a disadvantaged person, lie the perceptions, evaluations, expectations—in short, the psyche—of the individual.” (Dahl 1971, p. 95). For instance, subjective perceptions of inequality have been found to matter for redistributive preferences in particular (Cansunar 2021; Dallinger 2021) while the link between objective inequality and demand for redistribution seems non-existent or at least very weak (Trump 2023; Gimpelson and Treisman 2018; Schmidt-Catran 2016), but see Weisstanner and Armingeon (2022) for a contrasting perspective.

In general, individual factual knowledge about issues such as economic inequality (Cansunar 2021; Evans et al. 1992; Evans and Kelley 2004) and objective economic facts such as unemployment rates (Ansolabehere et al. 2013; Pedersen and Mutz 2019) is limited. Furthermore, individuals’ perceptions about their position in the income distribution are characterized by significant biases, in particular the so-called centrist bias. This bias implies that rich individuals tend to underestimate their relatively (high) position, whereas poor individuals fail to realize their relative poverty. By now, this basic finding has been repeatedly shown across a variety of country contexts (Cruces et al. 2013; Engelhardt and Wagener 2017; Karadja et al. 2017).

One popular explanation for perception biases is that individuals are embedded in non-representative, homogeneous social networks or reference groups, be it in schools (Cruces

et al. 2013), neighborhoods (Thal 2017), or other friendship networks. Individuals are better able to perceive and experience their personal environment than the whole country, essentially oversampling their own income group in their reference group (Evans et al. 1992; Cansunar 2021; Cruces et al. 2013). Such effects are aggravated in highly segregated contexts (Mijs 2016). Furthermore, economic information derived from the media can be distorted and not portray the entire reality (Jacobs et al. 2021).

Above and beyond such reference group effects we suggest political predispositions, particularly ideology, to play a crucial part in generating biases in perceptions. As already hinted at, correctly perceiving the national income distribution is a very complex task. Usually, people resort to heuristics, including political heuristics like ideology, to reduce the complexity of such tasks in everyday life. In line with this, decades of research in political psychology and political behavior have shown that individuals use party identification, ideology, and value orientations as heuristics when they form policy preferences, political habits, and perceptions about political facts (Boudreau and MacKenzie 2018; Goren 2013; Taber and Lodge 2006; Rekker and Harteveld 2022). Similarly, people use such heuristic cues when forming perceptions, as the literature on perceptions of the national economy has shown (Bisgaard 2015; De Vries et al. 2018; Ansolabehere et al. 2013). Here, we argue that when people try to make sense of their own place in society and, in particular, their position in the income distribution, they will refrain to more general political beliefs and interpret the question accordingly (see also Volpi and Giger 2022).

Like other fundamental political predispositions, political ideology is formed during early political socialization in adolescence and early adulthood and remains relatively stable afterwards. Particularly in European multiparty systems like the German political system, parent-child transmission in political ideology is strong (Rico and Jennings 2016; Ditmars 2023), and the development of a political ideology is the main political socialization process that drives the development of other, less central, political predispositions (Rekker et al. 2018). Without denying the possibility of similar early roots of a fundamental understanding of inequality and fairness, it is therefore plausible to expect ideology to influence specific perceptions about one's position in society and not vice versa.

We believe that both an economic and a cultural reasoning can link ideology and perception bias. This is in line with the general two-dimensionality of the political space (Bornschieer et al. 2021; Kriesi et al. 2008) and in particular the two-dimensionality of class politics (D'Hooge et al. 2018; Evans et al. 2022) and related understandings of inequality (Lindqvist 2024). In line with this literature, we suggest that ideology influences personal perception bias due to economic and cultural concerns. We suggest that the

mechanism for the economic logic between ideology and perception bias is (class) misidentification. Similarly, we suggest that the mechanism for the cultural link between ideology and perception bias is misperception related to both ingroups and outgroups. Figure 1 summarizes our theoretical expectations. In the following, we will explain our theoretical reasoning in detail.

To start, we define subjective overestimation of one's position as a situation where the individual's own ranking of her position is higher than her objective position in the income scale, based on her actual income and the real distribution of incomes. Vice versa, a subjective underestimation of income position is present when the individual puts herself in a lower position compared to her objective position.

First, we discuss the association between ideological predispositions on the economic left-right scale and perceptions of subjective income position. Economic left-wing ideology is fundamentally related to working-class identification (D'Hooge et al. 2018; Evans et al. 2022). Therefore, an (economically) left-wing person - perceiving herself also as part of the working class or at least related to this class - is more likely to also see herself as somebody with a rather low income compared to others in the society. This might also be explicable with reference to cognitive dissonance, which would otherwise arise, or with reference to working class identification. The related, contrasting argument can be put forward for (economically) right-wing citizens. Here, a person's believe in market-oriented solutions, low levels of redistribution etc. should be associated with perceiving herself to hold an above-average position in society, thereby benefiting from market-based solutions compared to statism. This should in turn be associated with an over-estimation of her income position.

In sum, we thus hypothesize the following:

Hypothesis 1 *H1a: Underestimation bias is more common among the economic left*

H1b: Overestimation bias is more common among the economic right.

Cultural ideology is fundamentally related to the relation between different societal groups (e.g. Zollinger 2024). Culturally conservative individuals are typically concerned with threats posed by multiple outgroups, be it immigrants, persons who do not follow the traditional male-breadwinner model, individuals with non-traditional sexual and gender identities, etc. - a phenomenon that can also be referred to as the multiplicity of cultural grievances (Off 2024). By contrast, culturally left-wing individuals are typically concerned with mitigating the disadvantages of multiple outgroups, either because they

directly identify with a particular disadvantaged group or support a compensation of disadvantages via public policies.

Taken together, the cultural dimension of political conflict, while being primarily about competing identities, also holds implications for socio-economic inequality, i.e. the distribution of incomes in society. As Kriesi et al. (2008) put it: Those who perceive themselves as being on the losing side of major socio-structural changes such as globalization, migration or changing gender roles tend to be susceptible to arguments of parties emphasizing that their relative situation has deteriorated while other groups have gained in income and status. Thus, feelings of relative deprivation and status loss are prevalent and also made salient in the political discourse, which is likely to spill over into perceptions of subjective income positions such that culturally more conservative and right-leaning individuals are more likely to underestimate their own income due to this in-/out-group dynamics. Vice versa, culturally left-wing individuals might be more attuned to perceiving their relatively privileged ingroup status and, therefore, more likely to overestimate their relative income position.

Hypothesis 2 *H2a: Underestimation bias is more common among the cultural right*
H2b: Overestimation bias is more common among the cultural left.

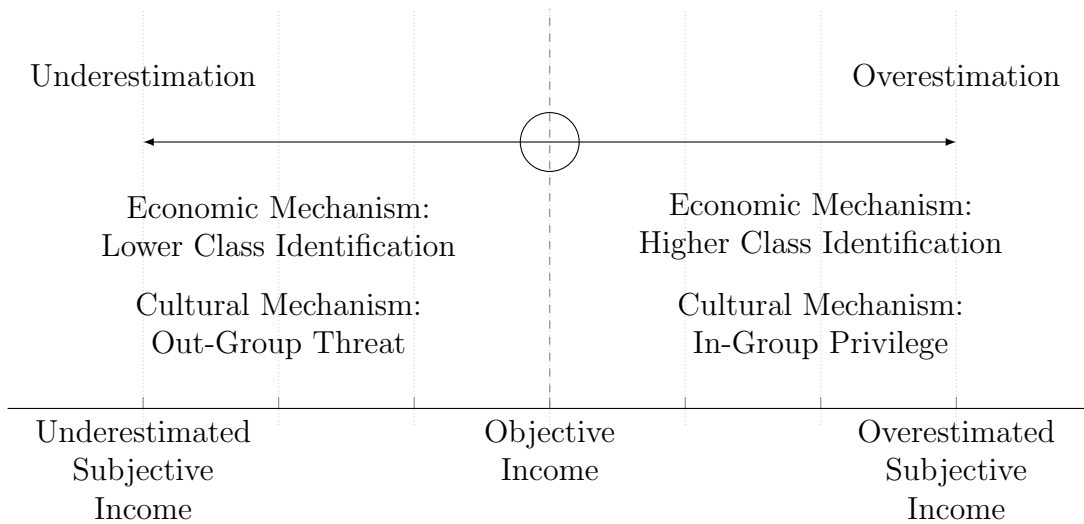


Figure 1: Mechanisms of Personal Perception Bias

In a next step, we hypothesize if and how perception biases in income position may be related to voting behavior. As mentioned above, given the cross-sectional nature of our data, we cannot make strong causal inferences about the directionality of these associations. At the same, from a theoretical perspective, it is plausible to assume that

broad ideological predispositions are more likely to shape individual perceptions of relative income position than vice versa. Together, ideological predispositions and positional perceptions should influence vote choice at a particular point in time. Of course, perceptions are also likely to influence policy preferences, which in turn affect vote choice, but we leave out this important step for the sake of simplicity here.

The core claim we want to test is whether subjective perceptions of income position exert an independent effect on vote choice, above and beyond the effect of ideological predispositions (which is why we control for the latter below). We argue that ‘perceptions’ matter in the sense that individuals’ perceptions of the state of the world are likely to be related to particular party preferences as they are also related to individual perceptions of political identities.

Individuals who perceive their income position to be lower than it actually is also tend to perceive a certain degree of relative deprivation. As we discussed above, people can interpret these feelings of deprivation as both economic or cultural grievances. Therefore, we can expect electoral consequences along both dimensions of political conflict.

Thus, individuals who underestimate their income position should be more likely to support both populist radical right parties as expression of their cultural grievances and radical left parties as expression of their economic grievances. This is in line with prior findings on relative deprivation and support for radical left and right parties (Burgoon et al. 2019). Applied to the German context we thus expect higher support for Die Linke (extreme left) and the AfD (extreme right). Beyond support for particular parties, underestimation of one’s income position may also be related to higher levels of political abstention and non-participation as individuals lose trust in the representative function of parties in general.

Vice versa, individuals who tend to overestimate their relative income position could be more supportive of traditional center-right parties as these parties appeal to the relatively better-off in economic terms. In the German case, this would be the Christian democratic parties (CDU and CSU) and the liberal FDP. At the same time, overestimation could be related to support for culturally left parties, in the German context in particular the greens (Bündnis 90/Die Grünen). Culturally left parties tend to aim at improving the situation of traditionally disadvantaged groups, a concern, that can be related to a culturally driven overestimation bias, as discussed above.

Compared to the effect of underestimation of one’s income, however, the effect of overestimation of income position may be weaker as it is less driven by (perceived) grievances, but rather confirming the prevailing status quo.

In short, we hypothesize:

Hypothesis 3 *H3a: Underestimation bias is related to voting for economically left and culturally right parties.*

H3b: Overestimation bias is related to voting for economically right and culturally left parties.

3 Data & Methods

The analyses are based on German data from the Inequality Barometer in 2020 and 2022. The 2020 and 2022 waves constitute repeated cross-sections of the German population, with ca. six thousand respondents in each wave. The Inequality Barometer is an online-survey with respondents sampled from an online-access panel using quota sampling according to age, gender, education, and NUTS-2 regions (including cross-quota). We rely on both waves of the Inequality Barometer, since each wave has particular advantages and disadvantages compared to the other wave, as discussed in detail below, with regard to the measurement of perception bias, ideology, and the control variables. The exact wording of all used survey items can be found in the appendix.

3.1 Measuring Perception Bias

To capture individuals' perception bias relative to their objective income position, we combine data on the respondent's objective (actual) income and their subjective placement in the income distribution. Both the objective and the subjective income measures are measured on a 10-point scale representing the German income deciles. The individual's perception bias is thus captured via the difference between both:

$$PerceptionBias = ObjectiveIncome(Decile) - SubjectiveIncome(Decile) \quad (1)$$

This measure ranges from the maximum possible overestimation (when someone in the lowest income decile positions herself in the highest income decile) to the maximum possible underestimation (when someone in the highest income group positions herself in the lowest income group). Empirically, these maximum values are, of course, extremely rare. To disentangle the effects of underestimation and overestimation bias separately, we construct two separate measures for these biases. In both cases, higher values indicate a higher bias.

Overestimation bias occurs when people believe they belong to a higher income group than they actually do. The measure of overestimation bias ranges from zero (indicating the absence of overestimation bias, i.e. correct income estimation and underestimation) to the maximum possible overestimation bias. Thus, for all over-estimators, the measure of overestimation equals the measure of perception bias in equation 1; for everyone else, it is zero. Higher values indicate a stronger overestimation bias.

Following the same logic, underestimation bias occurs when people believe they belong to a lower income group than they actually do. The measure of underestimation bias ranges from zero (indicating the absence of underestimation bias, i.e. correct income estimation and overestimation) to the maximum possible underestimation bias. Thus, for all under-estimators, the measure of underestimation equals the measure of perception bias in equation 1; for everyone else, it is zero. Higher values indicate a stronger underestimation bias.

In both survey waves, subjective placement in the income distribution is measured via a variant¹ of the MacArthur Scale of subjective social status (Adler et al. 2000). Respondents are shown a ladder with 10 steps representing the 10 income deciles and asked to rank themselves. The description of the ladder and the scale varies slightly between the 2020 and 2022 wave. In 2020, the endpoints of the ladder are explained as representing 10% of *individuals* with the highest/lowest income. In contrast, in 2022, the endpoints of the ladder are explained as representing 10% of *households* with the highest/lowest income. In both waves, the question regarding the objective measurement of income refers to respondents' household income. Thus, the measurement of perception bias is somewhat less reliable in 2020 than in 2022. We are not able to exclude the possibility that some of the perception bias we capture is due to an unequal resource distribution within households. While this is a clear disadvantage of the 2020 data, the 2022 survey wave has the disadvantage that we can use only half of the sample for our analyses (ca. 3000 respondents), since only half of the sample has been asked the question on subjective income (the other half was asked about wealth distribution).

3.2 Measuring Ideology

To measure political ideology we rely first on the established one-dimensional left-right self-placement and second on several policy attitudes that are combined into a two-

¹The original MacArthur Scale refers to the endpoints of the scale/ladder as 10% of society with the most money, the highest education, and the best jobs. In contrast, our measure solely refers to income and is, thus, suitable to capture biases in respondents' estimation of their *income*.

dimensional measure of an economic and a cultural dimension of ideology.

For this measure, we rely on a series of items, which we combine into two ideological scales using rotated factor analyses. In the 2020 wave, we work with six items on government responsibility to capture economic ideology: regarding the living standard of elderly and unemployed persons, reducing income differences, promoting equal chances for children and financial support for students, as well as the public provision of health care. Furthermore, we use three items to capture cultural ideology, in particular attitudes on law & order issues, towards immigrants, and on gender roles. Again, all items are coded or recoded in a way that higher values indicate a stronger tendency towards the political right. Unfortunately, in the 2022 wave, only two items are available to measure each ideological dimension (economic: government responsibility for health care and reducing income differences; cultural: law & order attitudes and attitudes towards immigrants).

Appendix tables 1 and 2 display the factor loadings. In both waves, the items used to capture the economic dimension indeed show high factor loadings on one factor, constituting the economic dimension. However, while the law & order attitudes and attitudes towards immigrants have acceptable factors loadings of ca. 0.4 in the 2020 wave, the loadings are only around 0.3 in the 2022 wave. Additionally, gender role attitudes do not load highly (0.24) on the factor representing the cultural dimension in the 2020 wave. Taken together, these considerations result in a certain disadvantage of the 2022 compared to the 2020 data with regard to the measurement of ideology.

Additionally, we use a classical one-dimensional measure of ideology as control: Left-Right self-placement is measured in both waves on a 11-point scale ranging from left to right, i.e. higher values on the left-right scale signal a stronger leaning to the right.

3.3 Control Variables

First, all of our analyses include respondents' objective income (in deciles), i.e. income decile fixed effects. Additionally, all analyses include a binary indicator differentiating between correct income estimations and any kind of biased income perceptions. On the one hand, this takes into account any undirected differences between those who misperceive their income position and those who do not. On the other hand, this allows us to disentangle the different reasons for zero-values on the underestimation measure (correct estimation and overestimation) and on the overestimation measure (correct estimation and underestimation).

Furthermore, we include a range of socio-economic and demographic control variables. In both waves, these are indicators for gender, age, age squared, migration background, labor force and employment status, education, and the size of the household. Additionally, all analyses include regional fixed effects on the NUTS-2 level. In the 2020 data, we have additional indicators for respondents' occupational qualification and parental education. In the 2022 data, the latter two indicators are not available. Instead, there are additional indicators for respondents' wealth.

This wide variety of socio-economic and demographic control variables minimizes two risks in our analyses. First, it minimizes the risk that relations between ideology and perception bias or between perception bias and vote intention are driven by spurious correlations between socio-economic indicators and both perceptions and ideology and/or vote intention. Second, it also minimizes the risk that the effects of misperceptions are simply the result of some groups having a disproportionately high or low income compared to their other resources (education, wealth, etc.) and at the same time distinct political leanings.

Our final analyses are divided in two steps, both of which include the above-discussed control variables. In the first step, we analyze how ideology relates to perception bias. In these models, overestimation and underestimation are the dependent variables. In the second step, we analyze how perception bias relates to vote intentions. These models include all ideological indicators (left-right self-placement, economic ideology, cultural ideology) next to the above-discussed indicators. Furthermore, the measures of underestimation bias and overestimation bias (now the key independent variables) are added to the models simultaneously.

4 Results

4.1 Descriptives

In the very first step, we look descriptively at the phenomenon of positional perception bias in the 2020 wave. The left part of figure 2 plots the average positional perception bias within each objective income decile in percentages. The darkest bars depict the share of respondents who underestimate their relative position, the lightest bars depict overestimation bias, and the middle bars depict the share of respondents who give a correct estimate of their relative position. It becomes apparent that underestimation bias is pervasive among the higher-income groups. Conversely, overestimation bias is

more widespread among the lower-income deciles. Taken together, this leads to the well-known pattern of a strong centrist bias (Cruces et al. 2013; Engelhardt and Wagener 2017).

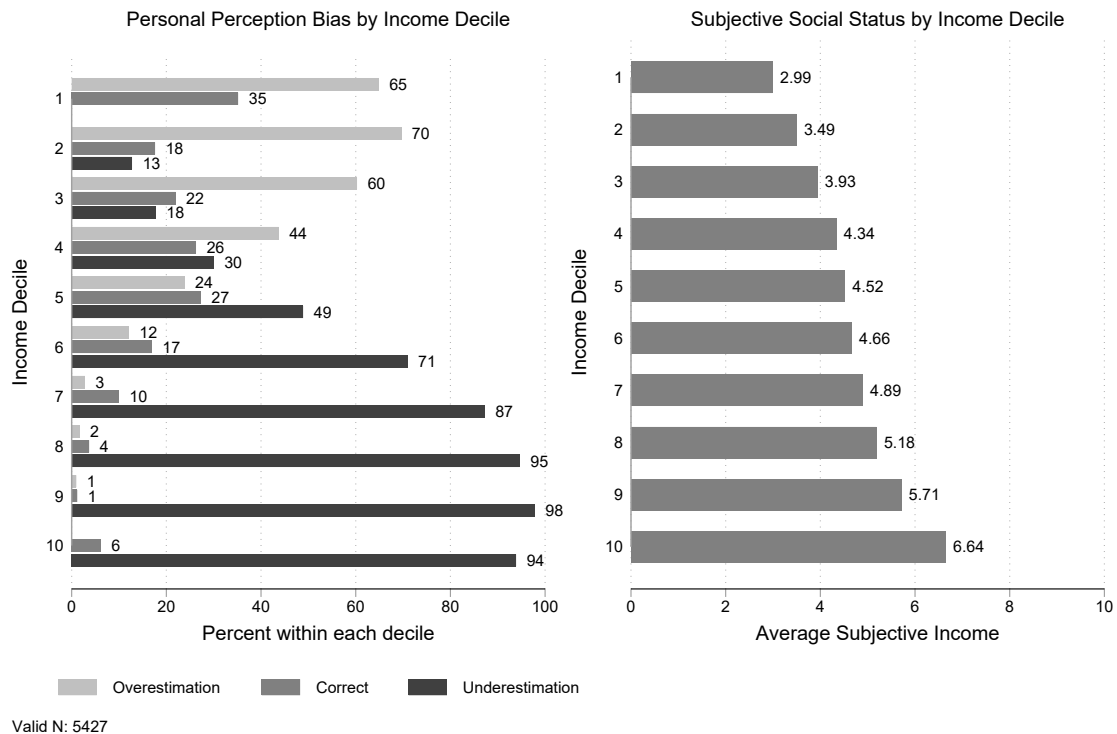


Figure 2: Descriptives

The right hand side of figure 2 displays the average subjective income position by decile which should range from 1 to 10 as it captures deciles. This part of the figure shows that to some extent, subjective perceptions match objective reality in the sense that high-income individuals are more likely to see themselves at a higher position (and vice versa for low-income individuals). The figure also shows the compressed nature of this perceived distribution as it ranges from 2.99 to 6.64 (and not from 1 to 10). Furthermore, figure 2 indicates that the lower income deciles are more likely to correctly estimate their income position. Among the four highest income groups, a maximum of 10 percent is able to position themselves correctly in the income distribution, compared to ca. 35 percent in the lowest decile. All of these descriptive patterns are exactly replicated in the 2022 wave of the Inequality Barometer (see appendix figure 7).

The following analyses on ideology, individual perception bias, and vote choice account for these ‘mechanistic’ relations between income and perception bias by focusing on variation within income deciles, i.e. controlling for each income decile. Furthermore, all analyses

control for a binary variable indicating whether a respondent guessed her position in the income distribution correctly or not.

4.2 Ideology and Perception Bias

In the next step, we regress ideology on individual perception bias, starting with data from the 2020 wave. In the upper part of figure 3, we see a precisely estimated null effect regarding the association between the respondents' left-right self-placement and individual perception bias (both with regard to underestimation bias and overestimation bias). This null effect is not too surprising, given the findings from previous studies reporting null effects (Karadja et al. 2017) or very weak associations (Engelhardt and Wagener 2017) between left-right ideology and perception bias.

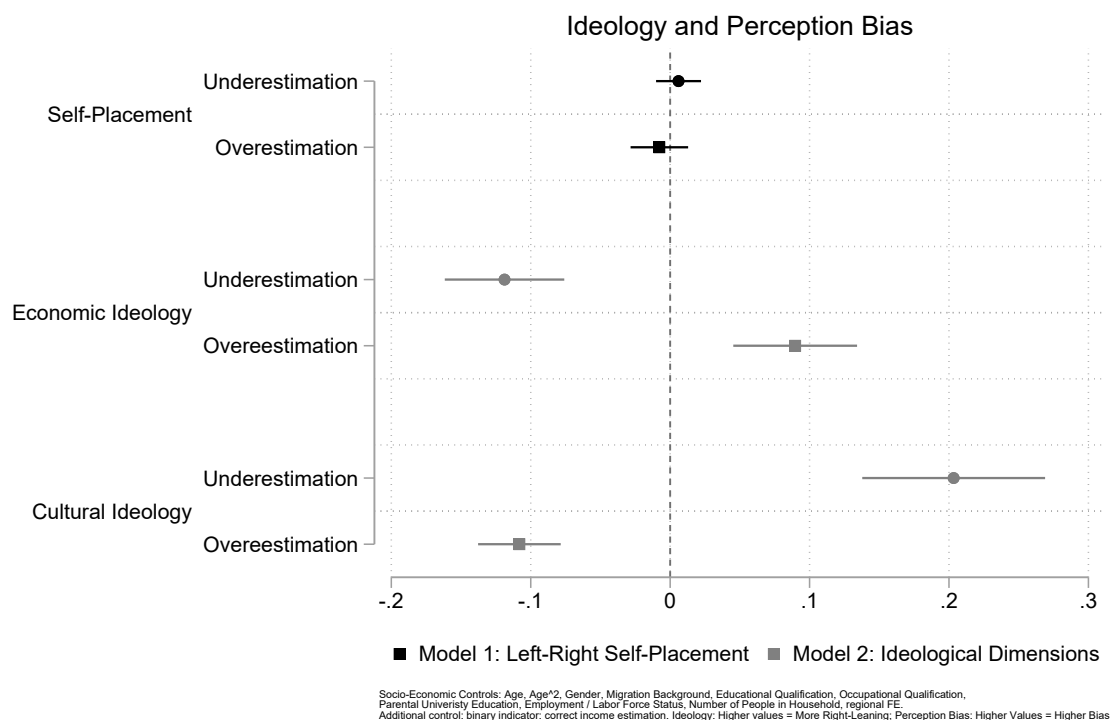


Figure 3: Ideology and Perception Bias

However, as the lower part of figure 3 highlights, this null effect should not be misunderstood as evidence against the relevance of ideological predispositions for perception biases. Once we look at both dimensions of ideology separately (though in the same model!), we see that economic ideology is negatively associated with underestimation bias, whereas cultural ideology is positively associated with this type of bias. Thus, economically left-leaning individuals and culturally right-leaning respondents are more

likely to underestimate their income position, confirming Hypotheses 1 and 2. Similarly, economically right-leaning individuals, just like culturally left-leaning respondents, are more likely to overestimate their income position. These opposing effects seem to cancel each other out when ideological predispositions are collapsed into one dimension only.

Figure 4 shows how these patterns play out when we consider the interaction between the economic and the cultural dimension of ideology. This figure is based on four ideological groups (left-left, economically left-culturally right, economically right-culturally left, right-right), but otherwise, the model set-up is the same as for the upper part of figure 3. To create these groups, ideological leanings are defined by median splits.

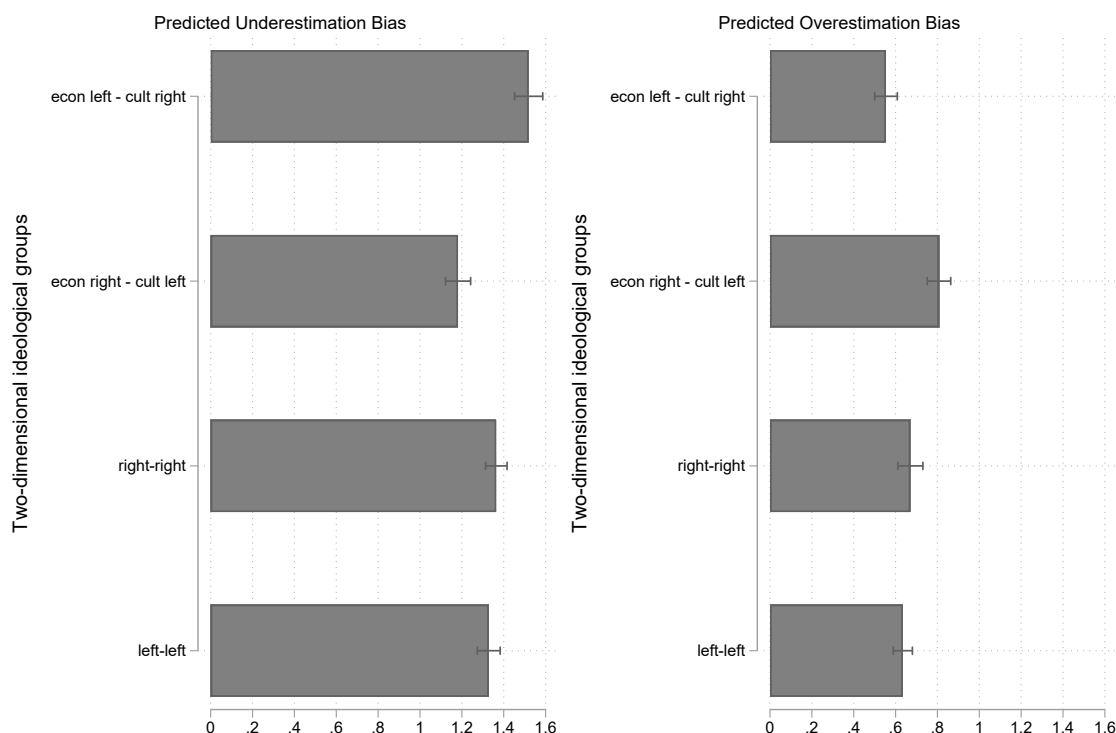


Figure 4: Ideological Groups and Perception Bias

The results in figure 4 highlight that individual perception bias is fundamentally a phenomenon of the two-dimensional political space, showing up the strongest in the ‘off-diagonal’, cross-pressured groups. First, we see that those with left leanings on both dimensions do not differ in their likelihood of showing any perception bias from those with consistent right (i.e. the right-right group) leanings. Second, we see the starkest contrast between the culturally left/economically right and the culturally right/economically left groups in their tendencies for over- and underestimation bias. Finally, those with economic left and cultural right leanings are most likely to underestimate their income and least likely to overestimate their income. Similarly, the economic right and culturally

left are most likely to overestimate their income and least likely to underestimate their income.

Again, all the discussed patterns are precisely replicated in the 2022 wave of the Inequality Barometer, as appendix figures 8 and 9 show.

4.3 Perception Bias and Vote Intentions

Finally, we turn to the question of how individual perception bias is related to respondents' voting intentions. To re-iterate, the basic argument is that perception bias partially originates from deep-seated political beliefs. Therefore, it is likely that different ideological camps prefer different policy solutions to overcome the issues they see as the source of their overly high or low income. This, in turn, should be reflected in different vote intentions.

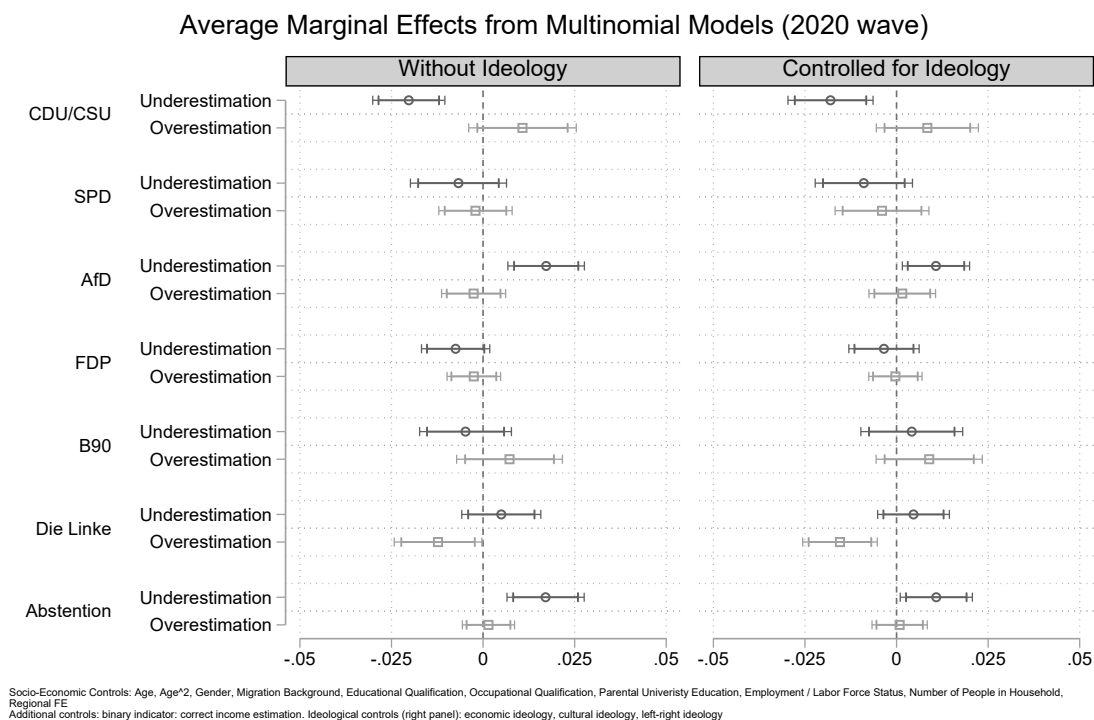


Figure 5: Perception Bias and Vote Intention

Figure 5 shows the relation between personal perception bias and vote intentions in the 2020 wave. Here, we see that underestimation bias is associated with a higher vote intention for the AfD, consistent with Hypothesis 3a. Even though overestimation does not increase support for the economically conservative Christian democratic

parties (CDU/CSU), underestimation bias decreases the intention to vote for these parties. Similarly, underestimation bias is not systematically linked to stronger support for the radical left (Die Linke), but at least a stronger overestimation bias is associated with significantly less support for this party. As expected, underestimation bias is associated with stronger political abstention.

A detailed look at the 2022 results in figure 6 shows some discrepancies. In this case, there is a (borderline) significant association between underestimation bias and support for Die Linke, but the significant effect for the AfD disappears. At the same time, we find a significant negative association between the underestimation bias and support for the Greens and the liberal FDP. Note that the discrepancies between the 2020 and 2022 results are not explicable with reference to the slightly different sets of control variables used. This can be seen in appendix figures 10 and 11 that replicate the analyses on perception bias and vote intentions using the same (and thus somewhat reduced) set of control variables for 2020 and 2022.

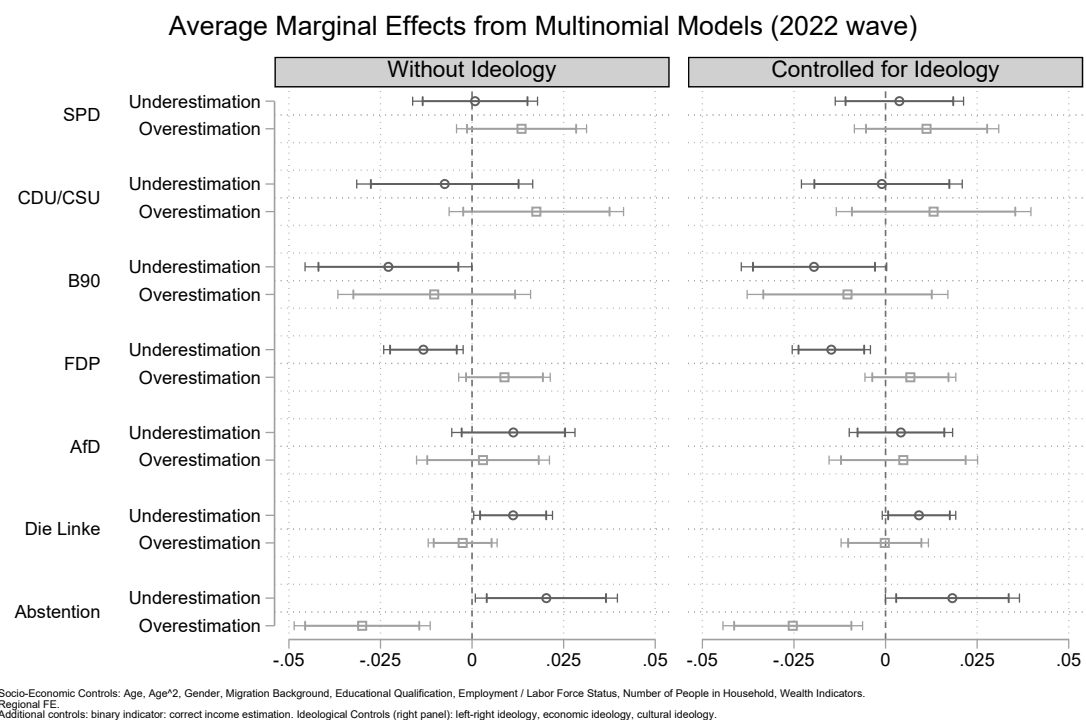


Figure 6: Perception Bias and Vote Intention

Thus, a superficial comparison between the 2020 and 2022 results would suggest only very few consistent results: first, underestimation bias is consistently related to a stronger tendency to abstain; second, underestimation bias increases (2022) and overestimation

bias decreases (2020) the intention to vote for the far left. The remaining results do not seem to be consistent between 2020 and 2022.

However, looking more closely, the remaining results lend some support to the economic and cultural arguments behind perception bias. We see that underestimation bias increases vote intentions for the culturally right parties (AfD 2020) and decreases vote intentions for culturally left parties (greens and liberals 2022), which is consistent with the cultural logic of perception biases. Furthermore, we see that overestimation bias decreases (Die Linke 2020) and that underestimation bias increases (Die Linke 2022) vote intentions for economically left parties and that underestimation bias decreases vote intentions for economically right parties (CDU/CSU 2020). This is consistent with the economic logic of perception bias.

Finally, it is interesting to note that when comparing the left panels of figures 5 and 6 with the respective right panels including ideological controls, there are only a few small to moderate differences, confirming the above expectation that ‘perceptions matter’ above and beyond ideological predispositions, at least to some extent. Most noteworthy is the strongly reduced size of the effect of underestimation bias on voting for the AfD in 2020. This is a strong sign that the relation between personal perception bias and vote intentions is far from completely determined by ideology, even though ideology clearly plays some role.

5 Discussion and conclusion

To conclude and sum up, our paper has explored the association between ideological predispositions and subjective perceptions of the individuals’ income position. Whereas previous research has mainly been concerned with identifying the existence of the so-called centrist bias in perceptions and its socio-economic determinants, our study follows a selected number of pioneering works that have explored the ideological dimension of perceptions biases (Engelhardt and Wagener 2017; Karadja et al. 2017; Volpi and Giger 2022). Different from these studies, we employ a two-dimensional measure of individual ideology, which has proven to be crucial in order to understand the deeper lying dynamics as the different dimensions ‘pull in different directions’. More specifically, we find that economically right-leaning individuals are more likely to overestimate their relative income position, whereas culturally right-wing individuals are more likely to underestimate it (and vice versa for left-leaning individuals). An exploratory analysis of the interaction effects between the two dimensions revealed that perception biases matter most for

cross-pressured individuals, combining, for instance, economic left-leaning with culturally right-leaning ideological orientations. In a further step, we also found that - to some extent - perception biases are related to vote intentions above and beyond the direct effect of ideology on these intentions. In this case, the effects were less clear-cut, however, but still displaying a certain association between underestimation bias and support for radical right- and left-wing parties as well as political abstention, in line with the literature on populism and relative social deprivation (Burgoon et al. 2019; Gidron and Hall 2017; Kurer and Staalduin 2022; Steiner et al. 2023).

For sure, our study has a number of limitations that need to be taken into account. For one, we only look at the case of Germany. While the centrist bias in perceptions has been found in many countries, including Germany, very few studies have so far explored the association between ideological predispositions and these perceptions, and ours is the first one to do so in a two-dimensional ideological space. Probing this association in other countries besides Germany is important in order to assess whether our findings can be generalizable to other cases. Furthermore, even though we could make use of two survey waves to show the robustness of our findings, the two waves work with slightly different operationalizations and measures, which might also affect slight differences in results. Furthermore, as the Covid-19 pandemic unfolded over the course of these two years, voting behavior and intentions is likely to have changed as well, providing a potential further explanation for our varying findings on this matter. Finally, the data is only available as (repeated) cross-sectional data. Looking forward (starting with the 2022 wave), the Inequality Barometer is collected as panel data, making it possible in the future to track the evolution of perceptions, attitudes and voting intentions within individuals, which might provide more leverage on potential causal effects in the future, even though the complexity of the issue makes it unlikely that uni-directional causal associations exist in the first place.

In sum, our study adds another complexity to the idea of self-correcting inequality. A mismatch between perceptions of inequality and objective inequality is typically seen as one of many reasons for the persistence of inequality. This study highlights that it even subjective perceptions of inequality do not necessarily lead to inequality-reducing policies since the interpretation of inequality and the electoral consequences are not limited to the economic dimension of political conflict. The two-dimensional space renders the translation of biases in perceptions into voting behavior less straightforward. This complexity likely also limits the consequences for party competition as it makes it hard for political parties to gauge the impact of perceptions of inequality (see also Helfer et al. 2024; Lascombes 2022).

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6 Appendix

Appendix for “Individual ideology and biased perceptions of income”

6.1 Measurement of Ideology: Factor Loadings

	e(r_L)	
	Factor1	Factor2
Harsher Punishment	.0137497	.4061101
Foreigners enrich cultural live	.1379524	.4203542
Women should be ready to cut down working time for family	.0336406	.2361316
Gov. Responsibility: health care	.5417418	-.0536311
Gov. Responsibility: standard of living for elderly	.5480367	-.1687596
Gov. Responsibility: standard of living for unemployed	.5170826	.1508495
Gov. Responsibility: support poor students	.5797135	.1929891
Gov. Responsibility: reduce income differences	.5242779	-.1022852
Gov. Responsibility: equalize chances of rich and poor children	.6331429	.1295189

Table 1: Rotated 2 Factor Solution

	e(r_L)	
	Factor1	Factor2
Harsher Punishment	-.1643347	.3075395
Foreigners enrich cultural live	.1373323	.3014927
Gov. Responsibility: health care	.6071496	-.0230022
Gov. Responsibility: income differences reduction	.5849946	.0121137

Table 2: Rotated 2 Factor Solution 2022

6.2 Main results replication with 2022 data

6.2.1 Descriptives: Perception Bias

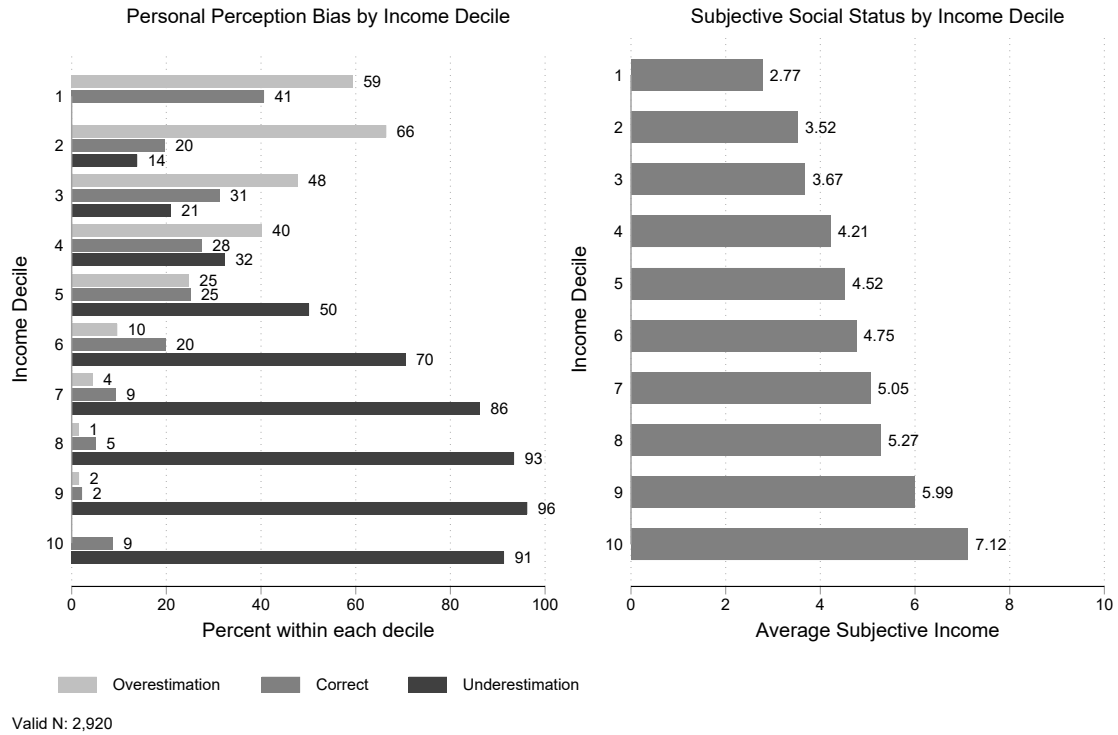


Figure 7: Descriptives 2022

6.2.2 Ideology and Perception Bias

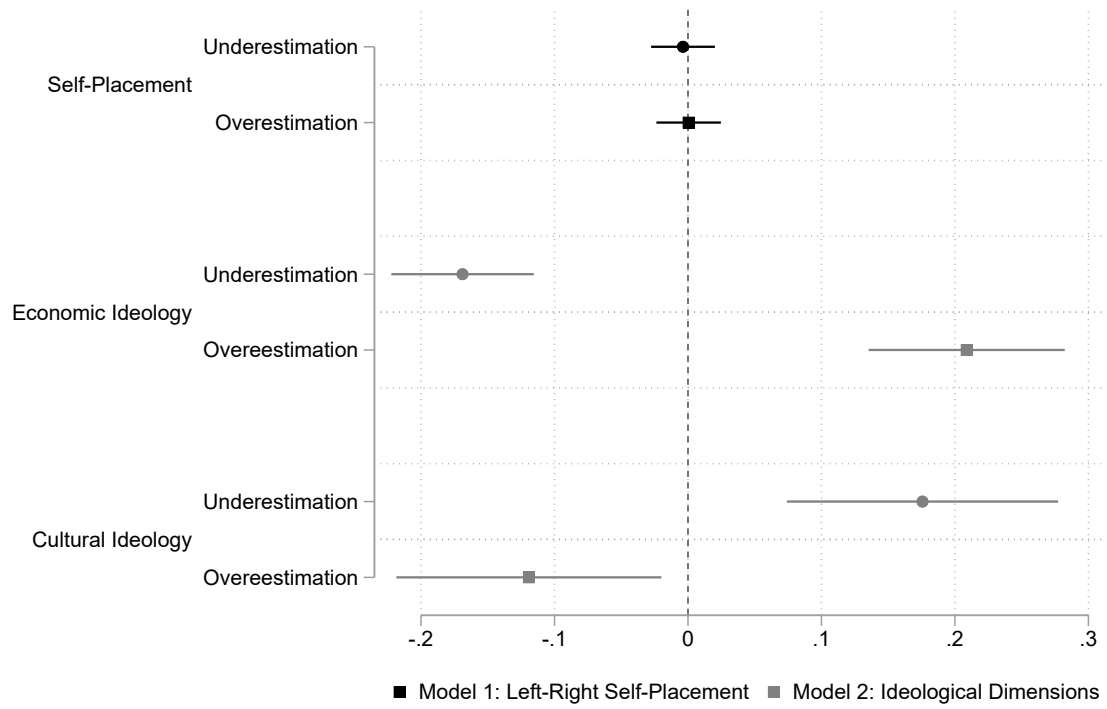


Figure 8: Ideology and Perception Bias 2022

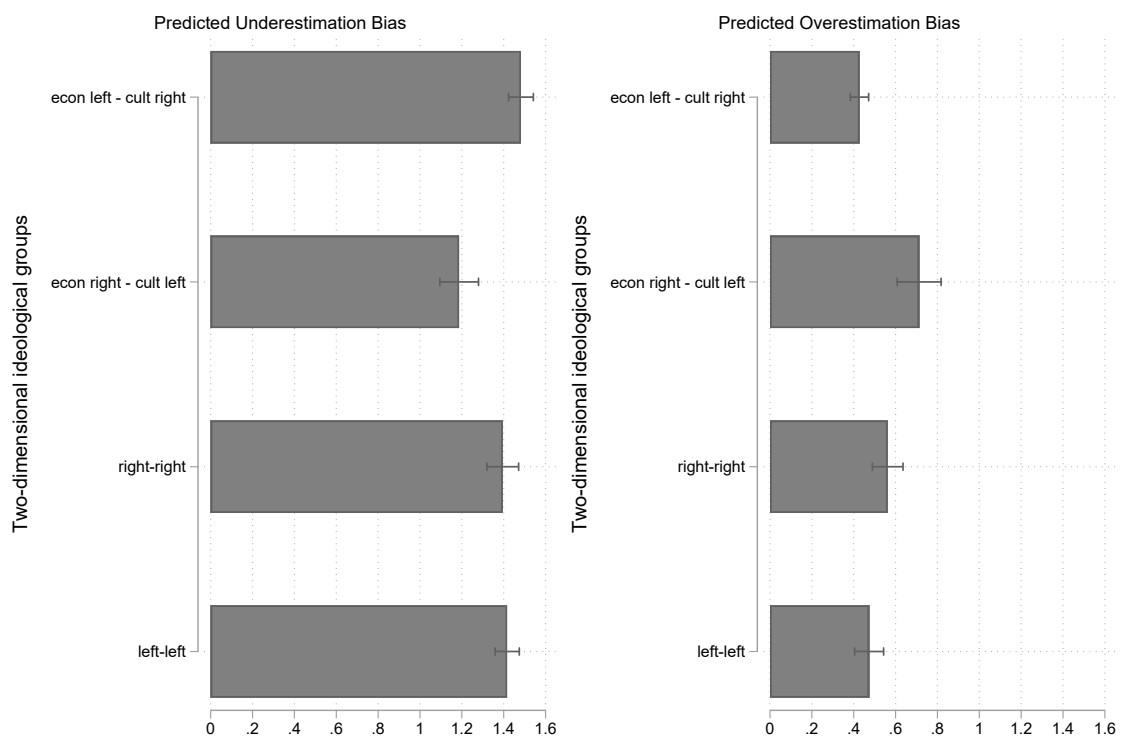


Figure 9: Ideological Groups and Perception Bias 2022

6.3 2020 and 2022 results with same set of control variables

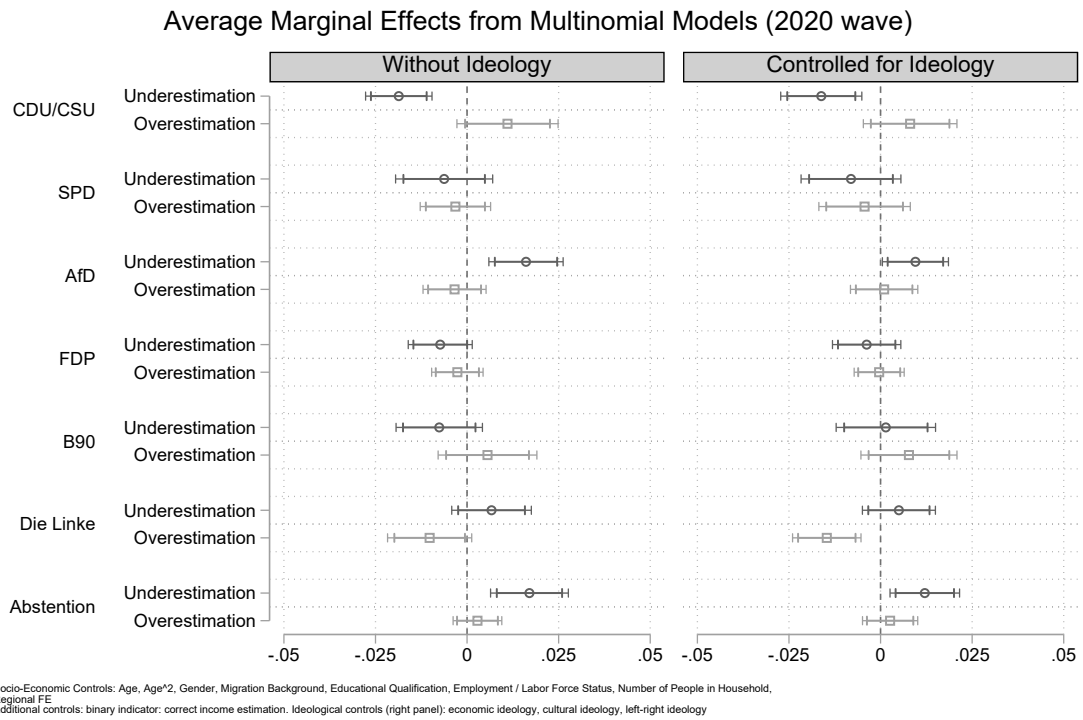


Figure 10: Perception Bias and Vote Intention

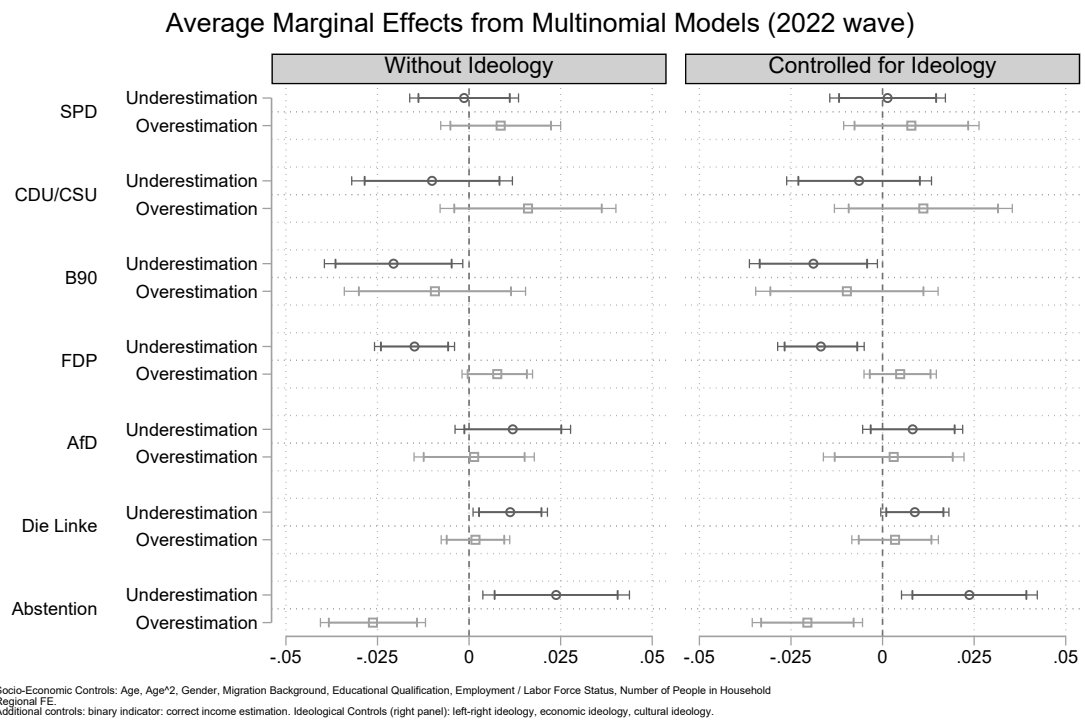


Figure 11: Perception Bias and Vote Intention

6.4 Tabular Results

6.4.1 Ideology and Perception Bias

	Underestimation	Overestimation	Underestimation	Overestimation
Left-Right Self-Placement	0.01	(0.01)	-0.01	(0.01)
Economic Ideology				
Cultural Ideology				
Income Decile 2	0.01	(0.03)	-0.70**	(0.11)
Income Decile 3	0.20***	(0.03)	-1.12***	(0.10)
Income Decile 4	0.44***	(0.04)	-1.45***	(0.11)
Income Decile 5	0.84***	(0.06)	-1.86***	(0.09)
Income Decile 6	1.42***	(0.08)	-2.20***	(0.09)
Income Decile 7	2.00***	(0.07)	-2.45***	(0.09)
Income Decile 8	2.68***	(0.08)	-2.55***	(0.09)
Income Decile 9	3.14***	(0.08)	-2.64***	(0.09)
Income Decile 10	3.31***	(0.13)	-2.60***	(0.09)
Female	0.10***	(0.03)	-0.03	(0.03)
Age	-0.02*	(0.01)	-0.02***	(0.01)
Age × Age	0.00	(0.00)	0.00***	(0.00)
Migration Background	0.09*	(0.04)	0.00	(0.04)
Intermediate Educational Qualification	-0.02	(0.04)	-0.06	(0.05)
High Educational Qualification	-0.22***	(0.05)	0.00	(0.06)
Secondary Occupational Qualification	-0.11 [†]	(0.07)	0.02	(0.08)
Tertiary Occupational Qualification	-0.36***	(0.07)	0.14	(0.09)
Parents: University	0.04	(0.05)	0.04	(0.05)
Non-Standard Employment	0.19**	(0.06)	-0.02	(0.07)
Pension	0.14*	(0.06)	-0.18*	(0.08)
Nonemployment	0.16*	(0.07)	-0.31***	(0.07)
Unemployment	0.53***	(0.14)	-0.52**	(0.17)
2 Person Household	0.15***	(0.04)	-0.00	(0.05)
3 Person Household	0.27***	(0.05)	0.05	(0.06)
4 Person Household	0.25**	(0.07)	0.02	(0.06)
5 Person Household	0.41**	(0.13)	0.08	(0.12)
6 Person Household	0.52 ⁺	(0.28)	0.01	(0.14)
7 Person Household	-0.66	(0.42)	-0.25	(0.21)
>7 Person Household	-0.28	(0.32)	-0.20	(0.27)
Correct=1	-0.92***	(0.04)	-1.25***	(0.05)
Constant	0.71***	(0.20)	3.11***	(0.21)
Regional FE	Yes	Yes	Yes	Yes
Obs.	4392	4392	4514	4514
R ²	0.62	0.42	0.63	0.43

Standard errors in parentheses

[†] $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3: Ideology and Biased Perceptions of Income 2020

	Underestimation		Overestimation		Underestimation		Overestimation	
Left-Right Self-Placement	-0.00	(0.01)	0.00	(0.01)				
Econ. Ideology (rot.)					-0.17***	(0.03)	0.21***	(0.04)
Galtan Ideology (rot.)					0.18**	(0.05)	-0.12*	(0.05)
Income Decile 2	-0.03	(0.07)	-0.45**	(0.16)	-0.03	(0.07)	-0.47**	(0.17)
Income Decile 3	0.22**	(0.07)	-1.15***	(0.16)	0.23***	(0.06)	-1.12***	(0.15)
Income Decile 4	0.58***	(0.07)	-1.58***	(0.16)	0.57***	(0.07)	-1.54***	(0.16)
Income Decile 5	1.02***	(0.10)	-2.00***	(0.15)	1.02***	(0.09)	-1.97***	(0.15)
Income Decile 6	1.44***	(0.11)	-2.17***	(0.16)	1.40***	(0.11)	-2.13***	(0.15)
Income Decile 7	2.12***	(0.08)	-2.46***	(0.15)	2.08***	(0.08)	-2.41***	(0.15)
Income Decile 8	2.83***	(0.09)	-2.55***	(0.15)	2.82***	(0.10)	-2.52***	(0.15)
Income Decile 9	3.16***	(0.11)	-2.69***	(0.17)	3.15***	(0.12)	-2.66***	(0.16)
Income Decile 10	3.30***	(0.16)	-2.71***	(0.19)	3.32***	(0.15)	-2.69***	(0.19)
Female	0.15***	(0.04)	-0.07 ⁺	(0.04)	0.13***	(0.03)	-0.08*	(0.03)
Age	-0.01	(0.01)	-0.03**	(0.01)	-0.02**	(0.01)	-0.01	(0.01)
Age × Age	0.00	(0.00)	0.00*	(0.00)	0.00*	(0.00)	0.00	(0.00)
Migration Background	0.05	(0.07)	0.08	(0.06)	0.04	(0.06)	0.08	(0.05)
Intermediate Eduational Qualification	-0.12	(0.07)	-0.20***	(0.05)	-0.12 ⁺	(0.07)	-0.18***	(0.05)
High Educational Qualification	-0.33***	(0.06)	-0.09 ⁺	(0.05)	-0.30***	(0.06)	-0.06	(0.05)
Non-Standard Employment	0.22**	(0.07)	-0.18**	(0.05)	0.22**	(0.06)	-0.17***	(0.05)
Pension	0.12	(0.09)	-0.17*	(0.08)	0.08	(0.08)	-0.10	(0.08)
Nonemployment	0.32***	(0.07)	-0.37***	(0.08)	0.30***	(0.08)	-0.37***	(0.08)
Unemployment	0.35 ⁺	(0.20)	-0.42	(0.29)	0.37*	(0.16)	-0.50*	(0.24)
2 Person Household	0.15***	(0.04)	0.05	(0.07)	0.13**	(0.04)	0.03	(0.07)
3 Person Household	0.21**	(0.07)	0.12	(0.09)	0.19**	(0.06)	0.08	(0.09)
4 Person Household	0.32***	(0.07)	0.13	(0.09)	0.29***	(0.06)	0.10	(0.09)
5 Person Household	0.37*	(0.16)	0.08	(0.15)	0.39*	(0.15)	0.05	(0.16)
6 Person Household	0.69 ⁺	(0.36)	0.15	(0.31)	0.68 ⁺	(0.38)	0.13	(0.28)
7 Person Household	-1.12***	(0.19)	-0.36*	(0.14)	-1.19***	(0.18)	-0.31*	(0.13)
>7 Person Household	0.35 ⁺	(0.20)	-0.62*	(0.28)	0.30	(0.19)	-0.56*	(0.25)
Wealth: 0 - 5.000 Euro	-0.29***	(0.08)	0.29***	(0.07)	-0.24**	(0.07)	0.25***	(0.06)
Wealth: 5.000 - 15.000 Euro	-0.46***	(0.10)	0.57***	(0.10)	-0.39***	(0.10)	0.53***	(0.10)
Wealth: 15.000 - 30.000 Euro	-0.47***	(0.09)	0.55***	(0.09)	-0.41***	(0.09)	0.50***	(0.08)
Wealth: 30.000 - 50.000 Euro	-0.60***	(0.10)	0.53***	(0.10)	-0.52***	(0.10)	0.46***	(0.09)
Wealth: 50.000 - 100.000 Euro	-0.67***	(0.11)	0.47***	(0.09)	-0.59***	(0.12)	0.41***	(0.08)
Wealth: 100.000 - 300.000 Euro	-0.73***	(0.10)	0.53***	(0.09)	-0.65***	(0.10)	0.44***	(0.08)
Wealth: > 300.000	-1.00***	(0.11)	0.60***	(0.08)	-0.92***	(0.12)	0.52***	(0.08)
Real Estate Owner	-0.16*	(0.06)	0.11*	(0.05)	-0.16*	(0.06)	0.10*	(0.04)
No Perception Bias	-0.98***	(0.06)	-1.07***	(0.07)	-0.97***	(0.05)	-1.07***	(0.07)
Constant	1.01***	(0.25)	2.85***	(0.25)	1.18***	(0.23)	2.56***	(0.24)
Regional FE	Yes		Yes		Yes		Yes	
Obs.	2239		2239		2345		2345	
R ²	0.63		0.46		0.64		0.47	

Standard errors in parentheses

⁺ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Ideology and Biased Perceptions of Income 2022

6.4.2 Perception Bias and Vote Intentions

	Vote Intention							Abstention
	SPD	AfD	FDP	B90	DIE_LINKE	Abstention		
Underestimation	0.01 (0.05)	0.22** (0.08)	0.00 (0.08)	0.09 (0.10)	0.14+ (0.06)	0.09 (0.09)	0.20** (0.06)	
Overestimation	-0.07 (0.06)	-0.01 (0.07)	-0.03 (0.07)	0.01 (0.08)	-0.29** (0.06)	0.10 (0.10)	-0.03 (0.05)	
Economic Ideology	-0.39*** (0.07)	0.04 (0.08)	0.13 (0.08)	-0.32*** (0.09)	-0.55*** (0.07)	0.13 (0.13)	-0.18+ (0.09)	
Cultural Ideology	-0.30** (0.11)	1.38*** (0.17)	-0.18 (0.17)	-0.97*** (0.13)	-0.18 (0.13)	0.16 (0.16)	0.69*** (0.13)	
Left-Right Self-Placement	-0.48*** (0.05)	0.45*** (0.05)	0.05 (0.05)	-0.47*** (0.04)	-0.94*** (0.04)	0.06 (0.06)	-0.22*** (0.05)	
Income Decile 2	-0.42* (0.18)	-0.17 (0.24)	1.10* (0.44)	-0.23 (0.26)	-0.26 (0.30)	0.10 (0.30)	0.10 (0.29)	
Income Decile 3	-0.23 (0.27)	0.07 (0.22)	0.35 (0.31)	-0.08 (0.60)	-0.42 (0.36)	0.03 (0.30)	0.03 (0.27)	
Income Decile 4	-0.29 (0.28)	-0.63* (0.31)	-0.07 (0.31)	-0.42 (0.51)	-0.62+ (0.37)	-0.49+ (0.37)	-0.49+ (0.29)	
Income Decile 5	-0.41 (0.30)	-0.88** (0.29)	0.32 (0.29)	-0.35 (0.56)	-0.93* (0.39)	-0.90** (0.37)	-0.90** (0.27)	
Income Decile 6	-0.49+ (0.30)	-1.40*** (0.41)	0.19 (0.41)	-0.48 (0.62)	-1.47** (0.40)	-0.90** (0.49)	-0.90** (0.32)	
Income Decile 7	-0.57+ (0.29)	-1.71*** (0.36)	-0.05 (0.36)	-0.25 (0.67)	-1.22** (0.42)	-0.46 (0.46)	-1.19** (0.44)	
Income Decile 8	-0.86* (0.43)	-2.01*** (0.43)	0.22 (0.43)	-0.66 (0.67)	-1.89*** (0.41)	-0.51 (0.51)	-1.72*** (0.40)	
Income Decile 9	-1.10** (0.36)	-2.08*** (0.44)	-0.08 (0.44)	-0.86+ (0.72)	-2.85*** (0.48)	-0.59 (0.59)	-1.84*** (0.39)	
Income Decile 10	-1.14*** (0.34)	-2.23*** (0.46)	0.45 (0.46)	-0.65 (0.63)	-2.37*** (0.43)	-0.51 (0.51)	-1.80*** (0.38)	
Female	-0.05 (0.12)	-0.60*** (0.17)	-0.31* (0.15)	0.05 (0.15)	-0.42* (0.14)	0.18 (0.18)	0.16 (0.13)	
Age	-0.02 (0.03)	0.07+ (0.04)	-0.07* (0.04)	0.03 (0.03)	0.08* (0.02)	0.02 (0.04)	0.02 (0.03)	
Age × Age	0.00 (0.00)	-0.00* (0.00)	0.00+ (0.00)	-0.00+ (0.00)	-0.00* (0.00)	0.00 (0.00)	-0.00+ (0.00)	
Migration Background	0.09 (0.19)	-0.37 (0.25)	-0.57* (0.25)	-0.13 (0.27)	0.02 (0.16)	0.30 (0.30)	0.19 (0.20)	
Intermediate Educational Qualification	-0.54*** (0.11)	-0.04 (0.19)	0.26 (0.19)	0.00 (0.20)	-0.13 (0.18)	0.22 (0.22)	-0.07 (0.16)	
High Educational Qualification	-0.53** (0.20)	-0.23 (0.24)	0.43 (0.24)	0.26 (0.27)	-0.24 (0.18)	0.23 (0.23)	-0.62*** (0.19)	
Secondary Occupational Qualification	0.02 (0.18)	-0.17 (0.24)	1.02** (0.24)	0.12 (0.36)	-0.02 (0.24)	0.27 (0.27)	-0.55** (0.19)	
Tertiary Occupational Qualification	0.01 (0.21)	-0.24 (0.30)	1.05** (0.30)	0.27 (0.38)	-0.12 (0.21)	0.26 (0.26)	-0.44+ (0.23)	
Parents: University	-0.24 (0.22)	-0.40* (0.20)	-0.05 (0.20)	-0.08 (0.19)	0.01 (0.11)	0.24 (0.24)	-0.43+ (0.23)	
Non-Standard Employment	0.06 (0.17)	0.07 (0.19)	-0.08 (0.19)	-0.01 (0.26)	0.14 (0.17)	0.20 (0.20)	0.18 (0.17)	
Pension	-0.25 (0.19)	-0.22 (0.29)	-1.29*** (0.29)	0.09 (0.37)	-0.08 (0.25)	0.32 (0.32)	-0.27 (0.27)	
Nonemployment	-0.07 (0.29)	0.16 (0.38)	-0.56 (0.38)	0.30 (0.56)	-0.08 (0.24)	0.41 (0.41)	0.48+ (0.29)	
Unemployment	-0.32 (0.40)	-0.02 (0.56)	-0.27 (0.56)	0.25 (0.61)	-0.82 (0.37)	0.52 (0.52)	0.30 (0.37)	
2 Person Household	0.12 (0.17)	-0.13 (0.20)	-0.14 (0.20)	0.19 (0.15)	0.20 (0.15)	0.23 (0.23)	0.16 (0.13)	
3 Person Household	0.33 (0.23)	-0.39 (0.26)	-0.43 (0.26)	-0.26 (0.28)	-0.05 (0.19)	0.37 (0.37)	0.21 (0.23)	
4 Person Household	0.02 (0.25)	-0.08 (0.25)	-0.35 (0.25)	0.08 (0.26)	0.52 (0.30)	0.44 (0.44)	0.65*** (0.19)	
5 Person Household	0.60+ (0.33)	-0.19 (0.33)	0.11 (0.33)	-0.41 (0.50)	-0.18 (0.34)	0.68 (0.68)	0.40 (0.32)	
6 Person Household	0.49 (0.69)	-1.11 (1.13)	-16.32*** (1.13)	-0.38 (0.59)	1.08 (0.95)	1.09 (1.09)	0.42 (0.86)	
7 Person Household	0.23 (0.40)	-15.87*** (1.18)	1.47 (1.18)	-19.00*** (0.81)	-17.67*** (0.81)	0.62 (0.85)	0.62 (0.94)	
>7 Person Household	-1.54+ (0.79)	0.36 (0.94)	-17.37*** (0.94)	-17.95*** (0.50)	-17.24*** (0.59)	0.68 (0.68)	-17.19*** (0.46)	
Correct=1	-0.05 (0.18)	0.16 (0.28)	0.22 (0.28)	0.36* (0.26)	-0.02 (0.16)	0.27 (0.27)	0.45* (0.22)	
Constant	3.35*** (0.61)	-3.57*** (1.08)	-1.32+ (1.08)	1.73* (0.74)	2.33* (0.69)	0.91 (0.91)	0.56 (0.96)	
Regional FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Obs.	3627							
McFadden's R ²	0.22							

Base Category: CDU/CSU

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5: Biased Perceptions of Income and Vote Intentions 2020

	Underestimation		Overestimation	
	Without Ideology	+ Ideology	Without Ideology	+ Ideology
main				
CDU/CSU	-0.0203*** (-4.04)	-0.0180** (-3.04)	0.0108 (1.44)	0.00841 (1.18)
SPD	-0.00672 (-1.00)	-0.00893 (-1.32)	-0.00207 (-0.40)	-0.00397 (-0.61)
AfD	0.0172** (3.23)	0.0108* (2.30)	-0.00258 (-0.58)	0.00156 (0.34)
FDP	-0.00749 (-1.58)	-0.00344 (-0.70)	-0.00252 (-0.68)	-0.000316 (-0.09)
B90	-0.00479 (-0.75)	0.00416 (0.59)	0.00723 (0.98)	0.00892 (1.21)
DIE LINKE	0.00498 (0.90)	0.00462 (0.93)	-0.0123* (-2.02)	-0.0154** (-2.98)
Abstention	0.0171** (3.17)	0.0109* (2.16)	0.00147 (0.41)	0.000843 (0.22)
Observations	4010	3627	4010	3627

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6: Biased Perceptions of Income and Vote Intentions 2020 (Average Marginal Effects)

	Vote Intention			Ich_würde_nicht_wählen		
	SPD	Bündnis_90_Die_Grünen	FDP	AFD	Die_Linke	Ich_würde_nicht_wählen
Underestimation	0.03 (0.09)	-0.13 (0.10)	-0.22* (0.11)	0.07 (0.11)	0.20 (0.15)	0.19+ (0.11)
Overestimation	-0.01 (0.11)	-0.14 (0.14)	0.04 (0.14)	-0.02 (0.10)	-0.10 (0.15)	-0.29* (0.13)
Econ. Ideology (rot.)	-0.30* (0.13)	-0.50*** (0.14)	0.02 (0.14)	0.27* (0.13)	-0.65* (0.11)	-0.15 (0.13)
Galfan Ideology (rot.)	0.00 (0.24)	-1.17*** (0.26)	0.02 (0.26)	1.96*** (0.22)	0.45 (0.23)	1.08*** (0.25)
Left-Right Self-Placement	-0.67*** (0.06)	-0.68*** (0.07)	-0.01 (0.07)	0.49*** (0.09)	-1.11*** (0.09)	-0.27*** (0.08)
Income Decile 2	-0.03 (0.49)	-0.21 (0.52)	0.33 (0.52)	0.26 (0.57)	0.01 (0.64)	-0.62 (0.46)
Income Decile 3	-0.35 (0.50)	-1.08+ (0.55)	-0.07 (0.55)	-0.33 (0.77)	-0.60 (0.71)	-1.02+ (0.61)
Income Decile 4	-0.48 (0.34)	-0.61 (0.46)	0.37 (0.46)	-0.26 (0.61)	-0.67 (0.64)	-1.10** (0.37)
Income Decile 5	-0.14 (0.41)	-0.37 (0.55)	0.60 (0.55)	-0.46 (0.64)	-1.37 (0.87)	-1.61** (0.54)
Income Decile 6	-0.54 (0.54)	-0.61 (0.66)	0.43 (0.66)	-0.99 (0.71)	-1.07 (0.67)	-1.97*** (0.76)
Income Decile 7	-0.57 (0.37)	-0.66 (0.53)	0.41 (0.53)	-0.37 (0.71)	-1.81* (0.60)	-1.84* (0.51)
Income Decile 8	-0.78+ (0.45)	-0.37 (0.45)	1.02 (0.60)	-0.90 (0.80)	-1.58+ (0.73)	-3.09*** (0.67)
Income Decile 9	-0.82+ (0.45)	-0.79 (0.63)	0.77 (0.63)	-1.04 (0.81)	-2.48** (0.81)	-3.44*** (0.73)
Income Decile 10	-1.21** (0.45)	-1.18+ (0.68)	0.50 (0.68)	-1.69* (0.71)	-2.24** (0.81)	-3.16*** (0.75)
Female	0.04 (0.13)	0.11 (0.15)	-0.38 (0.15)	-0.34+ (0.29)	-0.15 (0.20)	0.28 (0.19)
Age	0.00 (0.04)	-0.04 (0.04)	-0.18*** (0.05)	0.08 (0.06)	0.06 (0.07)	-0.03 (0.05)
Age × Age	0.00 (0.00)	0.00 (0.00)	0.00** (0.00)	-0.00+ (0.00)	-0.00 (0.00)	0.00 (0.00)
Migration Background	0.10 (0.23)	-0.14 (0.27)	0.20 (0.27)	0.24 (0.26)	0.36 (0.26)	0.69*** (0.19)
Intermediate Educational Qualification	-0.23 (0.21)	-0.04 (0.24)	-0.21 (0.24)	-0.14 (0.37)	-0.08 (0.42)	-0.24 (0.20)
High Educational Qualification	-0.41* (0.19)	0.39+ (0.22)	0.42 (0.22)	-0.35 (0.29)	-0.21 (0.41)	-0.61** (0.23)
Non-Standard Employment	0.34 (0.26)	0.24 (0.27)	0.37 (0.27)	0.02 (0.28)	0.12 (0.37)	0.00 (0.28)
Pension	-0.15 (0.29)	-0.38 (0.33)	-0.78 (0.33)	0.45 (0.56)	0.06 (0.53)	-0.69+ (0.36)
Nonemployment	0.10 (0.32)	0.09 (0.38)	-0.81 (0.38)	-0.12 (0.60)	0.92* (0.48)	-0.04 (0.33)
Unemployment	-1.60 (1.20)	-0.05 (0.84)	-16.00*** (0.72)	0.36 (0.72)	1.74+ (0.92)	0.33 (0.71)
2 Person Household	-0.13 (0.17)	-0.11 (0.28)	-0.11 (0.28)	0.29 (0.31)	-0.15 (0.30)	0.41 (0.26)
3 Person Household	-0.01 (0.25)	-0.25 (0.34)	-0.35 (0.34)	0.44 (0.40)	0.22 (0.27)	0.42 (0.37)
4 Person Household	-0.01 (0.21)	-0.13 (0.26)	0.31 (0.26)	0.27 (0.39)	-0.26 (0.49)	-0.01 (0.32)
5 Person Household	0.37 (0.52)	0.64 (0.57)	-1.78 (0.57)	-0.25 (1.23)	0.42 (0.64)	0.07 (0.73)
6 Person Household	-17.60*** (0.86)	-18.09*** (1.08)	-0.76 (1.08)	-0.87 (1.17)	-1.60 (1.14)	-17.16*** (0.65)
7 Person Household	2.15*** (0.65)	1.78** (0.56)	-1.73** (0.63)	21.63*** (0.63)	3.58*** (1.41)	0.28 (0.85)
>7 Person Household	-16.83*** (0.82)	0.08 (0.38)	0.94 (0.38)	-16.91*** (2.76)	-17.08*** (1.00)	-17.74*** (1.58)
Wealth: 0 - 5.000 Euro	0.16 (0.38)	0.07 (0.35)	-0.14 (0.35)	-0.53* (0.50)	-0.08 (0.26)	-0.15 (0.29)
Wealth: 5.000 - 15.000 Euro	0.54 (0.42)	0.61 (0.43)	0.44 (0.43)	-0.26 (0.59)	0.51 (0.37)	0.14 (0.37)
Wealth: 15.000 - 30.000 Euro	0.43 (0.33)	0.17 (0.41)	0.27 (0.41)	-0.64+ (0.56)	0.44 (0.33)	-0.07 (0.46)
Wealth: 30.000 - 50.000 Euro	0.34 (0.40)	0.41 (0.41)	0.74 (0.41)	-0.40 (0.55)	0.60 (0.55)	0.01 (0.37)
Wealth: 50.000 - 100.000 Euro	-0.07 (0.44)	0.36 (0.44)	0.46 (0.44)	-0.42 (0.50)	0.37 (0.57)	0.07 (0.42)
Wealth: 100.000 - 300.000 Euro	0.46 (0.36)	0.27 (0.36)	0.72 (0.36)	-0.21 (0.59)	-0.56 (0.32)	0.10 (0.42)
Wealth: > 300.000	0.52 (0.45)	0.50 (0.45)	0.61 (0.45)	-0.98** (0.51)	0.35 (0.35)	0.19 (0.40)
Real Estate Owner	-0.27+ (0.16)	0.00 (0.19)	-0.19 (0.19)	-0.38+ (0.21)	0.01 (0.19)	-0.30 (0.22)
No Perception Bias	-0.28 (0.33)	-0.57+ (0.31)	0.12 (0.31)	0.02 (0.41)	-0.60 (0.49)	-0.06 (0.39)
Constant	4.31*** (1.04)	5.54*** (1.19)	3.92** (1.19)	-4.72** (1.31)	4.29** (1.73)	3.90** (1.34)
Regional FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1923					
McFadden's R ²	0.25					

Base Category: CDU/CSU

+ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: Biased Perceptions of Income and Vote Intentions 2022

	Underestimation		Overestimation	
	Without Ideology	+ Ideology	Without Ideology	+ Ideology
main				
SPD	0.000821 (0.09)	0.00378 (0.42)	0.0135 (1.49)	0.0112 (1.11)
CDU/CSU	-0.00746 (-0.61)	-0.00102 (-0.09)	0.0176 (1.45)	0.0131 (0.97)
B90	-0.0228* (-1.97)	-0.0195 (-1.93)	-0.0103 (-0.77)	-0.0104 (-0.74)
FDP	-0.0133* (-2.40)	-0.0148** (-2.72)	0.00884 (1.39)	0.00677 (1.07)
AfD	0.0113 (1.31)	0.00420 (0.58)	0.00298 (0.32)	0.00485 (0.47)
DIE LINKE	0.0112* (2.04)	0.00913 (1.78)	-0.00257 (-0.54)	-0.000216 (-0.04)
Abstention	0.0203* (2.05)	0.0183 (1.96)	-0.0300** (-3.17)	-0.0253** (-2.60)
Observations	2002	1923	2002	1923

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: Biased Perceptions of Income and Vote Intentions 2022 (Average Marginal Effects)

6.5 Original (Translated) Questionnaire Items

6.5.1 Political Ideology

Left-Right Self-Placement 2020 & 2022

- Q: In politics people often talk of “left” and “right”. Where would you place yourself on this scale, where 0 means left and 10 means right
 - 2020: scale 0-10
 - 2022: scale 1-11

Cultural Ideology 2020 & 2022

- Q: How much do you agree with the following statements?
 - Criminals should receive harsher punishment than they do nowadays.
 - Cultural life in Germany is generally enriched by people who come from other countries to live here.
- (Only 2020): A woman should be prepared to cut down on paid work for the sake of her family.
- Scale: 1 (disagree strongly) - 5 (agree strongly)

Economic Ideology 2020

- Q: Please tell us in how far the state should be responsible for the following issues
 - The state should ensure health care for the sick.
 - The state should ensure a decent living standard for the elderly.
 - The state should ensure a decent living standard for the unemployed.
 - The state should grant students from poor families financial support.
 - The state should reduce income differences between high-income and low-income people.
 - The state should equalize the chances of children from rich and poor families.
- Scale: 1 (should not be responsible at all) - 4 (should be entirely responsible).

Economic Ideology 2022

- Q: How much responsibility should the state have with regard to ...
 - ... ensuring sufficient health care for the sick.
 - ... reducing income differences between the rich and the poor.
- Scale: 0 (The state should not be responsible at all) - 10 (The state should be entirely responsible)
- No answer

6.5.2 Perceptions Bias

Objective Income 2020

- How high is the monthly net income of your household? (Please take into account the sum of your wage, pension, or other income minus taxes and social security contributions. Please also take into account income from social benefits, rental income, housing benefits, child allowances, or other income. If you do not know your exact income, please estimate your monthly income.)
 - The monthly income is ...
 - I do not want to give an answer.
- (Filter: if no answer to income question above): Your answer about your income is very important for analysing the data. Therefore, please rank your income:
 - Below 1.140 Euro net
 - From 1.140 Euro to under 1.560 Euro net
 - From 1.560 Euro to under 1.950 Euro net
 - From 1.950 Euro to under 2.330 Euro net
 - From 2.330 Euro to under 2.740 Euro net
 - From 2.740 Euro to under 3.200 Euro net
 - From 3.200 Euro to under 3.750 Euro net
 - From 3.750 Euro to under 4.470 Euro net
 - From 4.470 Euro to under 5.670 Euro net
 - 5.670 Euro net or above
 - I do not want to give an answer.

Objective Income 2022

- How high is your typical monthly household income after subtracting taxes, social security contributions and other obligatory deductions? (The household net income is the sum of income of all members of the household, e.g. from wages, pension, child allowances, rental income, interest, regular private transfers minus taxes and social security contributions for health insurance, unemployment insurance, and pension insurance.
- (Filter: if no answer to income question above): Your answer about your income is very important for analysing the data. It would be very helpful, if you could at least rank your income in one of the following categories:
 - Below 1.000 Euro net
 - From 1.000 Euro to under 1.450 Euro net
 - From 1.450 Euro to under 1.800 Euro net
 - From 1.800 Euro to under 2.220 Euro net
 - From 2.220 Euro to under 2.600 Euro net
 - From 2.600 Euro to under 3.000 Euro net
 - From 3.000 Euro to under 3.650 Euro net
 - From 3.650 Euro to under 4.500 Euro net
 - From 4.500 Euro to under 5.700 Euro net
 - 5.700 Euro net or above
 - No answer

Subjective Income Placement 2020

- Imagine a ladder ranking where people in Germany are. On the lowest level there are the 10% of people with the lowest income, on the highest level there are the 10% of people with the highest income.
- On which level would you see yourself at the moment?
- 1 “1. level - 10% of people with the lowest income” - 10 “10. level - % of people with the highest income”.
- No answer

Subjective Income Placement 2022

- Imagine a ladder ranking where households in Germany are. On the lowest level there are the 10% of households with the lowest income, on the highest level there are the 10% of households with the highest income.

- On which level would you see your household at the moment?
- 1 “10. level - % of households with the highest income” - 10 “1. level - 10% of households with the lowest income”
- No answer

6.5.3 Voting Intentions

2020 & 2022 If the national elections (“Bundestagswahlen”) would take place next Sunday, which party would you vote for?

- CDU/CSU
- SPD
- AfD
- FDP
- Bündnis 90 - Die Grünen
- Die Linke
- Another party, which is ...
- I would not vote
- I am not eligible to vote
- No answer

Note: 2020: order of parties randomized, 2022: same set of parties but order not randomized and slightly different than shown.

6.5.4 Control Variables

Gender 2020 & 2022

- Are you ...
 - Male
 - Female
 - Diverse

Age 2020 & 2022

- In which year have you been born?

Respondents' formal education 2020 & 2022

- Which is your highest general educational degree? Here we do not refer to occupational qualifications like vocational training, business school, or university education.
 - Secondary school leaving certificate (“Haupt- oder Volksschulabschluss”)
 - Intermediate school leaving certificate (“Mittlere Reife oder Abschluss der Polytechnischen Oberschule”)
 - High school diploma (“Abitur”)
 - Other educational degree
 - No educational degree (yet)

Migration Background 2020 & 2022

- What applies to you? Please choose the appropriate answer for each point.
 - I was born in Germany.
 - My mother was born in Germany.
 - My father was born in Germany
- Yes - No - No answer

Employment Status 2020 & 2022

- Which is the best description of your current occupation?
 - Full-time employed with more than 30 hours per week
 - Part-time employed in main occupation
 - Part-time employed with less than 10 hours per week
 - Short-time work (“Kurzarbeit”)
 - Retired
 - Housework, childcare, care for other people
 - Permanently unable to work due to sickness or disability
 - Unemployed and looking for a job
 - Unemployed and not looking for a job
 - Other
 - (Only 2022:) no answer

What kind of employment do you have?

- Self-employed

- Permanent work contract
- Temporary work contract
- Helping family members
- Other

Number of people living in household (2020 & 2022)

- How many people live in your household (including you)?

Parental Education (Only 2020)

- Did your father or your mother study at a university (or a university of applied sciences)?
 - Yes - No

Occupational Qualification (Only 2020)

- Which highest occupational qualification from vocational training, a university, or a university of applied sciences do you have?
 - No occupational qualification
 - Secondary occupational qualification
 - * “Sekundarbereich 2, darunter: Lehre/Berufsausbildung im dualen System, Abschluss einer Berufsfachschule/Kollegschule, Abschluss eines Vorbereitungsdienstes für den mittleren Dienst in der öffentlichen Verwaltung, Abschluss an einer Schule für Gesundheits- und Sozialberufe”
 - Tertiary occupational qualification
 - * “Tertiärer Bereich, darunter: Meister-/Techniker- oder gleichwertiger Fachschulabschluss, Abschluss an einer Ausbildungsstätte für Erzieher, Abschluss an einer Fachschule der DDR, Abschluss an einer Fachakademie, Abschluss an einer Berufsakademie, Abschluss an einer Verwaltungshochschule, Abschluss an einer Fachhochschule, Abschluss an einer Universität oder Hochschule”
 - Other, not yet mentioned, qualification
 - No answer

Wealth (only 2022)

- Do you or other members of your household own real estate, i.e. houses, flats, or properties?

- Yes - No - No answer

Please think about all your savings, shares or other securities that you or other members of your household own. Assuming you could sell all all of these savings, shares or securities: how much money would be left after subtracting potential debts of you or other members of your household (plase do not take into account home loans).

- Only debts
- 0 to under 5.000 Euro
- 5.000 to under 15.000 Euro
- 15.000 to under 30.000 Euro
- 30.000 to under 50.000 Euro
- 50.000 to under 100.000 Euro
- 100.000 to under 300.000 Euro
- 300.000 Euro and above
- No answer